

CLAIMS:

Punkt B17

1. A method for determining the position of a medical instrument (3) introduced into an object (1) to be examined and for imaging the vicinity of the medical instrument (3), wherein the position of the medical instrument (3) within the object (1) to be examined is determined by means of a localization device (5) that is arranged at the end zone of the

5 medical instrument (3) that is to be introduced, image information of the vicinity of the medical instrument (3) being acquired at the same time by means of an image acquisition device (4) arranged on the medical instrument (3), the position of the medical instrument (3) being reproduced in a survey image (15) of the object (1) to be examined on the basis of the position determined, and images of the vicinity of the (1) to be examined which are associated each time with the relevant position being displayed on the basis of the image information acquired.

10 2. A method as claimed in claim 1, characterized in that at least one magnetic field sensor is used as the localization device (5) whose position is determined by means of an external measuring device.

15 3. A method as claimed in claim 1, characterized in that at least one active or passive microcoil is used as the localization device (5) whose position is determined by means of a magnetic resonance device.

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4. A method as claimed in claim 1, characterized in that an ultrasound sensor is used as the localization device (5).

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5. A method as claimed in claim 1, characterized in that the medical instrument (3) consists at least partly of a material that can be detected by means of an ultrasound device or a magnetic resonance device.

6. A method as claimed in claim 1, characterized in that an ultrasound device, notably an intravascular ultrasound device, is used as the image acquisition device (4).

7. A method as claimed in claim 1, characterized in that an optical coherence tomography device is used as the image acquisition device (4).

8. A method as claimed in claim 1, characterized in that an MR device, notably 5 an intravascular MR device, is used as the image acquisition device (4).

9. A method as claimed in claim 1, characterized in that an endoscope is used as the image acquisition device (4).

10. 10. A device for determining the position of a medical instrument (3) introduced into an object (1) to be examined and for imaging the vicinity of the medical instrument (3), which device includes:

- localization means (7) for determining the position of the medical instrument (3) within the object (1) to be examined, a localization device (5) being arranged in the end zone of the medical instrument that is to be introduced,
- imaging means (6) for the acquisition at the same time of image information concerning the vicinity of the medical instrument (3), an image acquisition device (4) being arranged on the medical instrument (3), and
- data processing and display means (12, 14) for determining and displaying the position of the medical instrument (3) in a survey image (15) of the object (1) to be examined, that is, on the basis of the position thus determined, and for determining, and displaying images of the vicinity of the object (1) to be examined, said images being associated with the relevant position, on the basis 25 of the image information acquired.

11. A medical instrument (3) to be introduced into an object to be examined (1), including a localization device (5) which is arranged in the end zone that is to be introduced so as to determine the position of the medical instrument (3) within the object (1) to be 30 examined, and an image acquisition device (4) for acquiring at the same time image information concerning the vicinity of the medical instrument (3), the position determined being used to determine and display the position of the medical instrument (3) in a survey image (15) of the object (1) to be examined, and the image information acquired being used

to form and display images of the vicinity associated with the relevant position of the object
(1) to be examined.

12. A medical instrument as claimed in Claim 11, characterized in that the medical
5 instrument (3) is a flexible instrument, notably a catheter.

13 A computer program which includes program sections for executing the
method as claimed in claim 1 or for controlling a device as claimed in claim 10 and/or a
medical instrument as claimed in claim 11 during execution of the computer program by a
computer.

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